

GALAPAGOS MATTERS

AUTUMN/WINTER 2011



› **Tourism** › **Floreana**
› **Blue-footed Boobies**

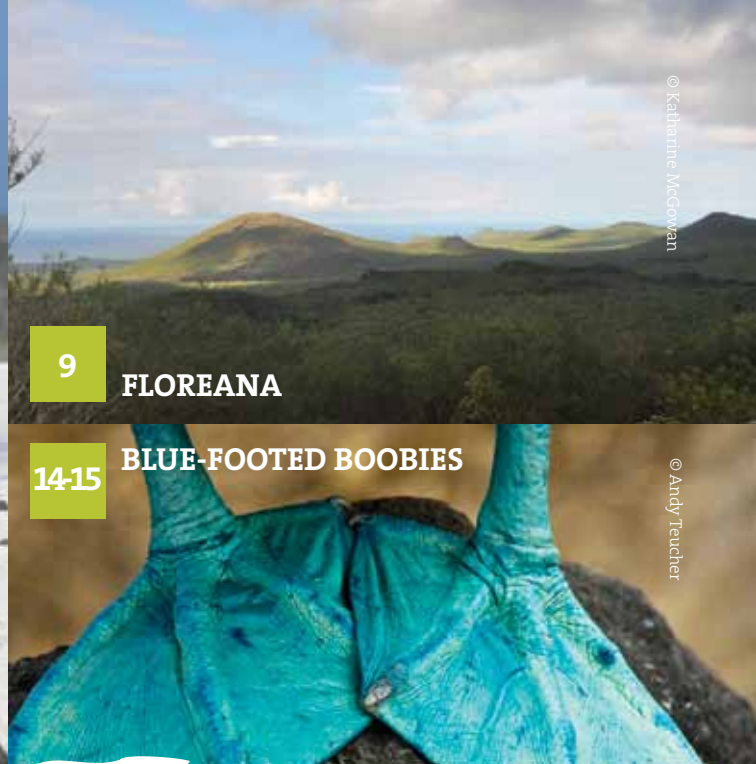
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BLUE-FOOTED BOOBIES

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© Jonathan R Green

Cover shot:

The Blue-footed Booby courtship display is one of the most elaborate dances of any marine bird in Galapagos. In this photograph the male, smaller on the left, was high stepping and sky pointing and had successfully attracted the female to his proposed nesting site on the cliffs of North Seymour island.

Contributors

© David Anderson



David Anderson is a professor of biology at Wake Forest University and has studied the evolutionary

and behavioural ecology of several species of Galapagos bird. In a stunning photographic feature, he outlines his current research into the population dynamics of the Blue-footed Booby.

© Katharine McGowan



Alex Wyndham Baker is a traveller and writer and the author of "Cursive". He and his partner Katharine

McGowan are just back from seven months volunteering on Floreana. Alex reflects on just what it is that makes this remote, enigmatic island so exceptional.

© Mark Georgiou



David Shukman the environment and science correspondent for the BBC. In this issue's

Global Galapagos, he highlights the devastation caused by plastic waste in the Pacific, a stark illustration of the impact that rampant consumerism can have on the environment.



© GCT



Welcome to *Galapagos Matters*

I am delighted to have taken over from Toni Darton as Interim Chief Executive and from all of us – Trustees, staff, members and other stakeholders – I would like to thank her for leading the growth of GCT these past four years. She has done a wonderful job for our organisation and we wish her great success in her next career.

And now I'd like to welcome you to your new-look newsletter, *Galapagos Matters*, which combines *UK News* and *Galapagos News*. All of us really hope you will enjoy the new look and feel of this biannual update about Galapagos and the activities underway to help protect these special Islands and their wildlife.

You will still find old favourites such as *News*, *Global Galapagos* and *Galapagos gifts* alongside expanded project updates and ideas on how you can get involved.

In this issue, we explore some of the challenges around tourism in the Islands and plans to make Galapagos a model for ecotourism (pp. 6-8). Professor David Anderson writes about his concerns for the Blue-footed Booby (pp. 14-15), whilst on page 10 you can read about some of the innovative ways people demonstrated their support for this popular species on Blue-footed Booby Day 2011. Throughout the articles you can read about the positive changes that your support has brought to projects in Galapagos.

Thank you once again for your support, and do tell us what you think about this first issue of *Galapagos Matters*.

Robert Silbermann *Interim Chief Executive*

DISCOVERING GALAPAGOS

This lithograph by Netherlands-born artist Johannes Gerardus Keulemans appeared alongside the formal description of the Galapagos Petrel (here referred to as *Oestrelata phaeopygia*). The species is endemic to Galapagos and critically endangered, confined to the Islands of Santa Cruz, San Cristobal and Floreana. "I have little doubt but this Petrel is the "small" Albatross spoken of by some of the early visitors to these islands," wrote British naturalist Osbert Salvin in his 1876 account of the species. In the background, Keulemans has drawn in the more common Galapagos Storm Petrel (left) and a miniature of the Galapagos Petrel in flight (right).



© The Linnean Society

Common name: Galapagos Petrel

Latin name: *Pterodroma phaeopygia*

Described by: Osbert Salvin

Date: 1876



NEWS

IN BRIEF

© GNP



Illegal finning

The Galapagos National Park (GNP) has seized seven fishing vessels operating illegally within the Galapagos Marine Reserve (GMR), disrupting what appears to be a carefully organised criminal operation.

In mid-July, the GNP's powerboat Sea Ranger 02 intercepted the Mary I and six smaller vessels in rough seas just south of Genovesa. All the vessels were equipped for long-line fishing and there were clear signs that they had been engaged in fishing for sharks, both strictly prohibited within the GMR.

Back in Puerto Baquerizo Moreno on San Cristobal, authorities conducted a thorough search of their storage compartments and recovered the remains of 379 sharks. The dorsal fins had been almost completely severed, suggesting these fish had been caught to feed the demand for shark-fin soup in Asia. As required by Ecuadorian law, all the illegally caught sharks were returned to the sea.

When, in early July, the Mary I left Manta on the coast of mainland Ecuador, there were nine individuals on board. Yet when it was captured, it contained 30 individuals, including minors. The arrested fishermen face criminal charges.

Mockingbird success

Researchers have made further progress in their work on the elusive Floreana Mockingbird, the emblematic and critically endangered species confined to two populations on two small islets – Champion and Gardner-by-Floreana. Over several months, the Charles Darwin Foundation's (CDF) Floreana Mockingbird Project which has received significant funds from GCT, has tracked the fate of more than 30 nests in an effort to improve our understanding of the factors affecting nesting success. Observations of juvenile behaviour will also inform how young birds establish new territories and breeding groups. These insights will underpin efforts to reintroduce the species back to Floreana.

© Luis Ortiz-Catedral



Shark record

A shark tagged in Galapagos waters has set a new migration record for the Eastern Tropical Pacific region. The female Silky Shark (*Carcharhinus falciformis*) was captured near Wolf island in March 2010 and fitted with an ultrasonic chip by members of Migramar, a network of scientists and conservationists who are tracking the movements of sharks

and other pelagic species in this region of the Pacific. More than a year later, researchers located the same individual in the vicinity of Clipperton Island, some 2,200 km to the northeast of Galapagos. One possibility is that Clipperton Island may act as a resting spot for fish migrating between the north and central Eastern Tropical Pacific.



Invasive monitoring

In May GNP wardens began work to determine the spread of the Big-headed Ant (*Pheidole*

megacephala) across urban sites on San Cristobal. This insect, native to southern Africa, was first detected in Galapagos in 2008 and is known to displace many species of native and endemic invertebrates.

At their latest visit to El Junco, the unique freshwater lake on San Cristobal, GNP rangers found no sign of the invasive fish Tilapia (*Oreochromis niloticus*). This strongly suggests that extensive efforts to eradicate it from the lake in 2009 have been successful.

The GNP has also investigated reports that a species of African snail may have reached San Cristobal. After a thorough search of the area where the mollusc was thought to have been, however, no trace could be found. The owners of nearby properties have been informed and are under instructions to report any further sightings directly to the GNP.

Meanwhile, the Fund for the Control of Invasive Species in Galapagos has approved an annual operating plan. The interest from the \$15.7 million fund will be invested in projects to prevent the spread of alien species that are already in Galapagos, strengthen regional capacity to do so and educate the public about the threat they pose to the Islands' long-term future.

Finch work

The presence of humans appears to be affecting the evolution of one of Darwin's Finches, according to research published in the scientific journal *Evolution*. An international team of researchers compared populations of the Medium Ground Finch (*Geospiza fortis*) at two sites on Santa Cruz, one with little human disturbance and the other in the vicinity of Academy Bay near Puerto Ayora. In wild finch populations, there is a well-established association between diet, beak shape and beak performance. This association is not obvious in Academy Bay, report the authors. This may have reduced the fitness of this population, they suggest.



Other research on the Medium Ground Finch, published in *PLoS One*, helps to quantify the impact of the invasive nest parasite *Philornis downsi* on this species. Comparing the success of nylon-lined nests (which reduce parasite load) against unlined nests, it was clear that *P. downsi* has a strong influence on the survival and fitness of nestlings.

New direction

Gabriel Lopez has stepped down as executive director of CDF after two-and-a-half years in the role. Former GCT trustee Swen Lorenz, with his background in finance and management, has taken over as interim executive director until a suitable replacement can be found. Lorenz's involvement with Galapagos began in 2006, when he co-founded a vocational school in Puerto Ayora. Since then, he has worked with several institutions on many different projects and was elected to the CDF board in 2010. "I am deeply committed to the cause of Galapagos, where the Charles Darwin Foundation continues to play a crucial role in providing scientific advice to a large number of stakeholders," says Lorenz. "The Foundation will increase its efforts to collaborate with other organisations locally, nationally and internationally."



Corral closure

The GNP was forced to exclude visitors from two Giant Tortoise corrals in August, following an increase in littering and reports of naturalist guides and tour groups flouting park rules on how to behave in the vicinity of the animals. For the immediate future, these enclosures will remain closed to the public.



The tourism question

By Henry Nicholls

How many visitors is too many? Ever since tourists began to venture to Galapagos in the late 1960s, it's a question that has recurred time and time again. So what's the answer?

In 1974, when the Galapagos National Park (GNP) issued its first management plan for the Islands, it recommended that there should be no more than 12,000 visitors in a given year. But rather than being a recommendation of what the Islands could reasonably sustain, this figure was simply a reflection of the number of available beds.

Since then, the apparently insatiable appetite of the world's population for Galapagos has fuelled immigration to the Islands and expansion of the tourism industry beyond all recognition. Which is why, in 2010, the visitor tally had reached 173,296.

Ignoring a minor blip caused by the global economic downturn in 2009, the growth of visitor numbers year-on-year has been close to exponential, increasing at an ever-increasing rate. It doesn't take a genius to work out that this kind of trajectory cannot be sustained. Indeed, it was the threat posed by "unbridled

tourism" (along with invasive species and overfishing) that landed Galapagos on the list of World Heritage Sites "In Danger" in 2007.

The Ecuadorian government responded promptly, calling for a "new model" for tourism to the Islands, one based on ecotourism principles with a clear commitment to sustainability. The GNP's new "visitor management system" is a major step towards this goal, with one of its key aims to spread the impact of tourism more evenly across the Archipelago.

Up until now, most cruise-style tours have offered clients the chance to see the most popular Galapagos spots in the space of a week or less. But this has resulted in a situation where only 20 of 70 possible land sites are routinely visited, says Magaly Oviedo, GNP's head of tourism. Not only does this risk damaging these popular sites, it also detracts from the overall visitor experience, she says.

Responsible Tourism is one of the Galapagos Conservation Trust's 15 Steps to Help Save Galapagos and in July we organised, with the Ecuadorian Embassy in London, a workshop on tourism. The meeting was attended by the GNP's head of tourism Magaly Oviedo (left), UK



tour operators and other interested parties, and aimed to gather the views of the stakeholders on what needs to be in place to achieve a sustainable future. A report on the workshop can be viewed on the projects page of our website (www.savegalapagos.org).

The solution is a new system that will require tourist vessels to switch from one- to two-week itineraries; this will halve the number of boats at any one site at any one time and give visitors the chance to experience many of the stunning but less well-known sites. "We need to showcase Galapagos as a whole rather than as twenty iconic sites," says Oviedo.

For more information on the GNP's "visitor management system" and the new itineraries, please visit www.galapagospark.org

The new itineraries, which will come into force in January 2012, will have no effect upon the total number of visitors to Galapagos. But they will be a much more effective way of managing where those visitors go, says Toni Darton, outgoing chief executive of the Galapagos Conservation Trust.

Alongside these improvements to the conventional cruise-eyed view of Galapagos, the GNP is also dealing with the extraordinarily rapid expansion in land-based tourism in recent years. In 2010, for example, almost half of the 170,000-odd visitors stayed in hotels rather than on boats.

The advantage of land-based over cruise-based tourism, says Oviedo, is that more tourist money reaches more people. But it is much harder to satisfy and manage these visitors. Although the GNP has no direct control over what goes on in the towns, it has been investing heavily in improving the access and infrastructure of visitor sites around the towns, has elevated the standards of day trips, created a cycle path on Santa Cruz from Puerto

continued overleaf

The new itineraries will increase visitor numbers to some of the less well-known sites. But, as these examples show, they still have a lot to offer ...

Urbina Bay, Isabela

In 1954, a fishing boat noticed a white stretch along Isabela's shoreline that had not been there before. Upon closer scrutiny, they found an eerie landscape strewn with decomposing creatures and an unbearable stench. A volcanic event had caused the ocean floor to rise by around five metres, exposing some 6km of reef and stranding sea creatures in the process. Today, it's possible to see the eerie remains of this underwater world and an abundance of striking wildlife, including Giant Tortoises, Lava Lizards, Galapagos Snakes and Flightless Cormorants.

© Metropolitan Touring



© lowjumpingfrog@flickr



of ledges, convenient roosting spots for a plethora of Galapagos birds, including Blue-footed and Nazca Boobies, Brown Pelicans, Noddy Terns and Swallow-tailed gulls. But as it's a marine site, the snorkeling is not to be missed, with rays, sea lions and fur seals frequent visitors to the Cove.

Buccaneer Cove

A popular haunt of pirates, whalers and Charles Darwin, Buccaneer Cove on Santiago has a fascinating human history. It boasts an array of volcanic features, from a tuff cone on the southern rim to lava, cinder and scoriae to the north. There are plenty

© Bert Forbes



Punta Pitt, San Cristobal

Punta Pitt lies at the Easternmost tip of San Cristobal, with nothing but the Pacific between it and the Ecuadorian mainland. The landing

site is a sandy cove, from which the trail skirts a small volcanic cone before revealing a colourful lava plateau, adorned with carpet weeds and Boobies. This is the only place in Galapagos where all three Booby species congregate to breed. It is also a good place to see both Magnificent and Great Frigatebirds.

Ayora to Bellavista and developed activities like artisanal fishing expeditions that will appeal to this land-based slice of the market.

There are also plans to increase the entrance fee to the Galapagos National Park, which has remained fixed at \$100 for more than 10 years. If the price per day decreases the longer a visitor stays in Galapagos, there will be a strong financial incentive to spend weeks in the Archipelago rather than days. It is also hoped that the new pricing structure will generate sufficient income to make the GNP the first genuinely self-sufficient national park in the world.

“We need to showcase Galapagos as a whole rather than as twenty iconic sites,”

MAGALY OVIEDO, HEAD OF TOURISM,
GALAPAGOS NATIONAL PARK

It is down to bold changes like these that the World Heritage Centre agreed, in 2009, to take Galapagos off the list of sites “In Danger”. But even with these improvements to

management, Oviedo is prepared to acknowledge that the number of visitors cannot increase indefinitely. She refuses to be drawn on a precise figure – this is a matter for all sectors, including government and the people – but “there will have to be a cap some time soon”, she says.

This will not be easy. It will take a President, elected for a four-year term, to forego the short-term rewards of growing tourism so as to secure the Archipelago and the wealth it can generate long after he or she has passed from office.

It would be unpopular too, not least in Galapagos where so many people depend on tourism for their livelihoods. “Such a step would not be possible without guaranteeing the livelihoods of Galapagos residents”, says Oviedo.

“But when you see what is happening in the towns, with demands for more water, more energy, more hotels and more space, the case for putting a cap on visitor numbers is clear,” she says.

“It will happen. Maybe not in the next one, two, five years, but it will happen.”



Henry is a freelance science journalist, the author of *Lonesome George* and the editor of *Galapagos Matters*.



Floreana magic

by Alex Wyndham Baker

After an acutely Dickensian winter in a draughty Dorset cottage, the opportunity to spend seven months on a tiny island in the Pacific was too good to miss. My partner Katharine and I knew very little about Galapagos and even less about our destination, Floreana.

Currently the focus of an ambitious multi-year initiative aimed at eliminating invasive species and establishing a sustainable ecological and economical framework for its human residents, our brief was to encourage sustainable practice amongst the 120-strong community and teach English to anyone keen to learn.

Half expecting tropical cliché paradise, it was something of a surprise to see Floreana's scrub-mantled volcanoes hove into view. The smallest (and first) inhabited island, Floreana's infamous, film-script history is well documented, with tales of buccaneers, failed penal colonies, cannibalism, mutinies, murders and disappearances aplenty and, walking back along the beach from class one day, I wasn't particularly surprised to find an ancient human tooth on the dark sand.

Although ostensibly pristine, environmentally she's had a few knocks: some bright spark torched it in the 19th century, the indigenous tortoises are long gone, the mockingbirds cling to a couple of tiny islets and the seas have been hammered, reducing local income and the tourism draw of once world-class diving. Aggressive plants like blackberry threaten to run riot, and there are an estimated 5000 feral cats ploughing through native birds ill-equipped for feline guile.

Warmly welcomed by the small community despite our rusty Spanish, we quickly fell into an easy-going routine that, cut off from worldly cares and concerns beyond the horizon, must characterise island life the world over. Ours was semi-ascetic in simplicity; early rising with the sun, a stroll along the shore to a Sea Lion colony, household chores, English classes and meetings with the villagers, and early to bed after candle-lit dinners under the stars. At weekends, long walks up into the hills for jaw-dropping views encompassing the entire Archipelago. Our twice-daily highlight, however, was snorkeling. We'd timed it perfectly to match the sea turtle breeding season – their arrival, their strenuous month of mating, laborious laying in front of our verandah and the dash-to-

sea gauntlet of the tiny, vulnerable young.

The natural rhythm of the tides and the moon, melodious waves lulling you to sleep, the unavoidably healthy lifestyle and the riotous dawn chorus of the warblers, finches and flycatchers made for a regenerative, invigorating stay that took time to wear off, an indication of how far we've drifted from the earth's natural pace in the frenetic modern world.

This is, perhaps, key to Floreana's sustainability and future prosperity; high-brow (rather than high-end), long-stay community tourism where people come to escape the noise and the bedlam and the cars and the pressure of people and time and getting-things-done. Certainly it would be an improvement on the current 60 or so tourists who arrive daily, visit the tortoise reserve and the pirate caves, spend little more than ten bucks and leave (p. 13).

By providing something special, unique and different, the community could compete with the bigger players from bigger islands. And, at dusk, with blink-and-miss-it greenflash, Turtles gaping for air, Sea Lions sliding off to work, Boobies Stuka-ing the shallows and no sound but a calmly slapping sea, that's just what Floreana is: special, unique and different.

Who's who?

Richard Moody is the new Head of Fundraising at Galapagos Conservation Trust (GCT). We asked him a few questions to find out more:



What attracted you to this job?

- > Having worked for many years for international development charities, raising funds to help communities deal with natural disasters and adapt to climate change, I jumped at the chance to work for GCT. Climate change is a major threat to Galapagos and it is critical that local communities play a pivotal role in the development of the Archipelago. I feel passionately about communicating the crisis the Islands currently face and raising the money needed to save them.

What does your job involve?

- > I will be working on all areas of fundraising. One of the most fun ways to raise money is Blue-footed Booby Day, which took place in June. I was so keen to start that I couldn't resist taking part during my notice period!

Do you have a fundraising message for GCT supporters?

- > There are many ways to get involved and raise money for Galapagos. Perhaps one of the most valuable is to leave a gift in your Will. It is very simple to do and if you would like to find out more, please call me on **020 7629 5049** or email me (richard@gct.org). I have already been touched by the commitment

and work of others in their support for Galapagos and GCT. Here are some examples of what people have been doing to get involved and raise money and awareness of Galapagos:



© GCT

A Blue-footed fundraising effort!

GCT supporters across the country took part in Blue-footed Booby Day in June. Georgia Berry (pictured below) and Max Fraser completed the Scotland Cape Wrath Challenge with five runs in six days across all forms of boggy Scottish terrain, culminating in a relay marathon. They also held a Blue-footed Booby cake and sock sale and their efforts were supported by the artist Vanessa Garwood with an online auction of one of her paintings. Georgia and Max managed to raise over £4,000 from their Blue-footed Booby fundraising – an incredible effort!



© Max Fraser

Bourn School

In September 2010, Rachel Baxter, Assistant Head Teacher of Bourn Primary School in Cambridgeshire, visited Galapagos and was so inspired she created a Galapagos-themed project for pupils aged 7-11. The result was extraordinary. The pupils became so interested in the Galapagos Islands that Bourn School and GCT are developing a school curriculum Galapagos pack to involve other schools up and down the country in these projects. To find out more about the Tortoise Club or the new school curriculum Galapagos pack, please go to our website (www.savegalapagos.org) or email us (gct@gct.org).



© Bourn Primary School

Photo competition

Online voting for your favourite image will be from **1–31**

December. This will help decide on the public's winner of GCT's photo competition where winners will make up GCT's 2013 calendar. Look out for this on our website (www.savegalapagos.org).



Galapagos Day

This year's Galapagos Day lecture took place at the historic Royal Geographical Society of London in September. Following an introduction by GCT's outgoing chief executive Toni Darton, GCT's chairman Edmund Truell welcomed the guests and expressed his delight at the Trust's achievements in his first year as chairman. Sharing some of the highlights, he thanked GCT's supporters, staff and volunteers for their continued enthusiasm and commitment to Galapagos.

Edmund then welcomed the keynote speaker – the BBC's Science and Environment Correspondent David Shukman. Having travelled the world on a huge array of assignments, David gave an extremely knowledgeable and polished talk, complemented by footage to rival the BBC Natural History Unit! He took the audience

on a journey through the *Pacific in Peril* and touched on some of the challenges the Ocean faces, most of which sadly affect our very own Enchanted Islands (see p. 16).

David also drew our annual raffle, which boasted the star prize of the trip of a lifetime for two to Galapagos kindly donated by

galapagosislands.com. The winner, Anne Green from Ticknall, had bought a ticket from her daughter Claire, a keen supporter of GCT since travelling to the Islands a few years ago. Mrs Green was not in the audience but was thrilled to have won such a wonderful prize.



Video clips from David's talk can be viewed on our website (www.savegalapagos.org).

> What's on?

In 2012 there will be many events and activities surrounding the massive *Galapagos* exhibition (p. 12). Look out on our website for more information on the artists' individual exhibitions and how you can get involved by attending a talk, signing your child up to our Tortoise Club or for more ideas to get involved. The *Galapagos* exhibition will tour to the following venues:

- 4 May-1 July, The Bluecoat, Liverpool
- 2 November-12 January, The Fruitmarket Gallery, Edinburgh
- April 2013, Centre de Arte Moderne in Lisbon

What's new?

- You can now follow us on **Twitter** @galapagossip
- You can now make an instant donation of up to £10 by simply texting **GALA15 £10** to **70070**.



The Gulbenkian Galapagos Artists' Residency Programme

In 2007 Galapagos Conservation Trust met with the Calouste Gulbenkian Foundation to discuss a unique project – an artists' residency programme in Galapagos. The idea slowly evolved and since the project's inception thirteen well-known artists have taken part. The artists were invited to explore the Islands both as a

visiting tourist via a week-long cruise and as artist/researcher through a short stay on the island of Santa Cruz.

gather together to reveal a contemporary insight into the cultural reality, the human stories and the living laboratory of Galapagos.

Each artist had the chance to work both with scientists at the Charles Darwin Foundation and with the local community, since local capacity building and sharing is an important component of the project. The artists were encouraged to connect with the Islands in the way most appropriate to their individual curiosity and artistic genre. This has resulted in an intriguing range of connections and outcomes – all of which

In 2012, the British public will have the chance to see the outcomes of the residency programme through a touring exhibition of work and a publication. Opening at The Bluecoat, Liverpool in May 2012 the exhibition will feature images generated by the artists whilst on their residency as well as work that has emerged from their reflections in the months and years following their return home. The exhibition will tour to The Fruitmarket Gallery in Edinburgh in late 2012 and the Centre de Arte Moderne in Lisbon in early 2013.

This has been a new and exciting way for GCT to build awareness about Galapagos and we are extremely grateful to the Calouste Gulbenkian Foundation for their fantastic support. To find out more about the project, the artists and the exhibition please visit www.artistsvisitgalapagos.com.



The cook and a Blue-footed Booby trade insults in a sketch from the Galapagos comic being developed by Alexis Deacon.



Dorothy Cross visited Galapagos in 2008. The photograph shows a bone depository in the grounds of the Charles Darwin Foundation in Puerto Ayora.

Floreana: a model for ecotourism

© Trevor Platt



Part of the move towards ecotourism in Galapagos (see pp. 6-8) is to generate greater benefits for local communities and to increase their awareness of the importance of natural resource conservation.

As part of our continued support for Project Floreana – the first restoration of an inhabited island in Galapagos – GCT is delighted to be working to help turn Floreana into a model destination for the ecotourism sector. The aspiration surveys we funded last year showed that Floreana residents are keen for tourism to develop in a way that is appropriate for their island home. Project manager, Felipe Cruz, will be working

with experts in the tourism industry and the local community to turn Floreana into a model of sustainable tourism. A crucial part of this vision will be to grow tourism numbers in a sustainable manner, ensuring the revenue this generates provides real and lasting benefits to both the local population and the island's biodiversity.

Low lights for invasive insects

Godfrey Merlen is one of the most recognised figures in Galapagos, having arrived from England in 1970. He has witnessed many changes during this time and has worked tirelessly to safeguard the Islands' future. The diversity of projects he has been involved with during his 40-years' residency includes everything from combating illegal fishing and modernising the Galapagos National Park's patrol boats to researching the Islands' unique wildlife, including the study of sperm whales and fur seals. He is also an accomplished wildlife artist.

More recently Godfrey has focused on tackling the aliens of the Islands. Invasive species have caused incredible damage to island ecosystems throughout the world and are one of the greatest risks to island biodiversity. It is therefore vital to stop the introduction of new invasive species of insects

both to Galapagos and between islands, since once established they can be particularly difficult to remove. The major routes for insects coming into contact with the Islands are by boat and aeroplane. Godfrey was instrumental in the introduction of fumigation and quarantine for all incoming aircraft and has campaigned successfully for new regulations regarding lighting on vessels. Having established that strong ultraviolet lighting on cargo and cruise ships attracts flying insects, new legislation now demands all boats within the Galapagos Marine Reserve are fitted with low ultraviolet lighting. Thanks to support from GCT, Godfrey will oversee the implementation of this resolution by making sure boat owners are installing

You can read Godfrey's new blog about his work and up-to-date news on the Islands on GCT's website.

the correct lighting, installing 150 insect zappers on the boats to reduce this further and educating crew members and passengers about the need for these measures. We hope that this project will also raise awareness amongst travellers to Galapagos and encourage their active participation in the control of introduced insects.



The Blue-foot feeds almost exclusively on fish, targeting schools of small species like sardines, anchovies and mackerel. They attack, sometimes in cooperative groups of around a dozen birds, by plunging into the ocean at speeds of up to 100 km per hour and swimming after their prey.

© Torrey Trust

Taking a dive?

By David Anderson

Padding back and forth on their outlandish feet, plummeting into schools of fish at terminal velocity, Blue-footed Boobies are one of the highlights of any observer's experience in Galapagos. I recall the 1980s and '90s on Espanola Island, where most of my research occurs, when a large Blue-foot breeding colony of 1,000 birds or so could be found most of the time. Then, in the late '90s, it disappeared. Today, we rarely see even individual birds on Espanola, with a handful of nests at most.

Maybe they are nesting elsewhere in the Archipelago? Could be. Regrettably, we have very few data from other sites where Blue-foots might be breeding. But the impression of several long-term Galapagos hands is that the large breeding colonies on Fernandina, Isabela, Floreana and Daphne are smaller and gather less frequently than they did in the 1970s and 1980s.

With support from the Galapagos Conservancy, Swiss Friends of Galapagos and Galapagos Conservation Trust, we have now started a formal study of Blue-foot population size, adult survival and other variables relevant to their conservation. In June this year, my Ecuadorian graduate student David

Anchundia and I surveyed most of the Galapagos coastline to detect breeding colonies and to count birds. We were happy to find several thousand individuals, a significant fraction



© Joe Liffik

of the population size estimated in the 1970s. But we also found several former breeding sites that appear to have been abandoned and were unable to detect any new colonies.

“Today, we rarely see even individual birds on Espanola, with a handful of nests at most.”

With many Boobies congregating to dance for each other, we were able to place numbered leg bands on over 600 birds. By tracking the fate of these individuals over the next few years, we hope to work out if and where they nest and the success of any attempt at breeding they make. With hard numbers, we should be able to work out whether the population is really in decline and, if it is, have a better idea why.



If you would like to support this research, you can do so in several ways:

- Make a donation to the Galapagos Conservation Trust
- Buy a Booby tie or Booby book from our gift shop (p. 19)
- Adopt a Booby

For more information, see the website www.savegalapagos.org or call 020 7629 5049



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Below left: During courtship, the male Blue-foot points his head and tail to the sky, unfurls his wings and whistles, all the while stamping upon the ground to draw attention to his impressive feet. These may be an honest indicator of male quality, with females tending to prefer males that boast the bluest feet.

Below right: Blue-footed Boobies usually lay two and sometimes three eggs. In a good season, when there is plenty of food, the parents can rear more than one chick. But if times are lean, the first chick to hatch will command most of the food, resulting in the starvation of its younger, smaller siblings.



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The plastic Pacific

by David Shukman

David Shukman is the BBC's environment and science correspondent. In 2008, his striking reports from the remote Midway Islands in the Pacific brought home the global impact of a careless attitude to waste.

It was one of our first shocks when we arrived on the tiny island of Midway Atoll, a speck of coral lying, as its name suggests, smack in the middle of the Pacific Ocean.

A cute Brown Albatross chick, one of a vast colony of these magnificent seabirds, was struggling to eat, suffering the appalling misfortune of having a large plastic hook jammed in its beak. The hook must have been wedged in place for some time because one edge of the beak was distorted around it.

Run by the United States Fish & Wildlife Service, Midway is

a protected nature reserve and one of its experts, John Klavitter, moved in to help the bird. He asked me to hold it while he gripped the hook and gently pulled. It came out easily and with it a thin plastic net about four or five inches long.

The Midway albatrosses – up to two million of them – survived the Japanese bombardment of World War II and then a huge US Navy presence in the Cold War. But since the 1960s, tons of plastic objects have been washing up on the beaches every day, a new and serious menace to the birds' survival.

Such waste is thought to stretch over hundreds of miles of the Pacific – “the great garbage patch” – surging in from rivers, dumped by the megacities of Asia, or tossed overboard from ships. Being remote is no defence. Ocean currents have carried our plastic to all seven continents. It's been found on the icy shorelines of Antarctica. It sullies tourist resorts, marine sanctuaries and ecologically precious islands like Galapagos.

Midway's misfortune is that it lies in the path of a current called the North Pacific Gyre, which circulates past California, across to Japan and China, up to Alaska and then round again. The result is that all over the island we found the decomposed carcasses of birds whose bellies contained toothbrushes, cigarette lighters and other fragments of plastic.

The Fish & Wildlife Service, which has researched the threat, reckons that every single albatross has ingested some quantity of plastic.

So, back to our chick. How exactly did the hook end up in its beak? John explained the likeliest scenario: that the chick's parents, foraging up to 800 miles from Midway, would have spotted the object drifting just below the ocean surface, ingested it and then fed it to the chick believing it to be food.

If a chick's belly is filled with plastic, there's no room for nourishment and it will soon fade and die. Extracting the hook gave this bird another chance, but it was an exception. In many parts of the world, turtles and seals have been spotted entangled in old fishing nets, dolphins in the plastic holders for sets of beer cans and seabirds in torn plastic sheeting.

Our broadcasts for the BBC triggered an avalanche of concern – offers to help clean up Midway, inventions for ridding the oceans of plastic, outrage at mankind's wanton destruction of nature.

I asked John and his colleagues for their advice. The best thing you can tell your viewers, they said, is to look at their own streets, beaches and neighbourhoods and keep them clear of plastic. In other words, the problem starts at home. We talk of “throwing things away” but “away” isn't some abstract idea – it's a real place, like an island in the Pacific.

Islanders

Nallely Villacis ...

...was born on Floreana and though just eleven years old is passionate about the future of her island.

What is life like on Floreana?

I live with my parents and three-year-old brother in Puerto Velasco Ibarra, the main town on Floreana. Our house is pretty typical for the Island. It is large and welcoming, with big windows that let in a breeze during the hot season.

Tell us about your school.

I have just finished my final year at the local state primary school "Amazonas". Although there are just four classrooms and only about 20 children, we have lots of good facilities, including computers. I wish I could stay on at school on Floreana for at least another three years but there is no secondary education here. So I am hoping to continue my studies in Puerto Ayora on Santa Cruz. It is close enough for me to be able to come home at the weekend to visit my parents.

How do you feel about the work of the Charles Darwin Foundation?

I love Project Floreana. CDF has taken us on excursions to see different sights on the island, helped teach us to conserve nature, to recycle as much

as possible and to use native and endemic plants in our gardens. With the support of the CDF, parents and the whole community, we built a "living fence" around our school made from native and endemic plants.

I would like my island to be preserved in as natural a state as possible and it's really important that children and the Floreana population gets involved in this kind of work.

How do you see Galapagos in 20 years from now?

In my dreams, I would like there to be better basic services, like medical care and transportation, especially in an emergency as we are very isolated. But such

changes would have to be done without harming the Islands.

Apart from Floreana, where else have you been in Galapagos?

I have travelled to Isabela, Santa Cruz, San Cristobal and also to uninhabited islands like Bartolome with its stunning landscape. But Floreana is definitely my favourite place in Galapagos. Apart from the fact it is so peaceful, it is as if everyone here belongs to one big family.

© Veronica Mora



© Veronica Mora

Reviews



EXPLOSIVE ART

Worlds in the Making

by Semiconductor, FACT, Liverpool, until 11 September 2011, free admission

Inspired by their visit to Galapagos, UK artists Ruth Jarman and Joe Gerhardt – Semiconductor – created an exhibition that explored the material nature of our world and how we experience it.

Worlds in the Making, made possible through support from GCT's Gulbenkian Galapagos Artists' Residency Programme (GGARP) (p. 12), appropriated the tools and techniques of volcanologists to reinterpret the volcanic landscapes of the planet. By combining scientific data with film, sound and animation, Semiconductor created moving images that vividly portrayed and explored these dystopian landscapes.

The installations capture the power and magnitude of volcanic activity across the globe while exploring how we have sought to tame it through scientific endeavour. Elaborate animations showed the growth of mineral crystals accompanied by an evocative soundtrack taken from seismic data collected deep beneath active volcanoes. And archival footage from the Smithsonian revealed both the spectacular and the absurd as people picnic alongside erupting volcanoes.

Claire Rainford

Look out for more exhibitions by Semiconductor and other GGARP artists on our website and at the 2012 Galapagos exhibition.

TALKING FINCH

Darwin's Finches: Readings in the Evolution of a Scientific Paradigm

edited by Kathleen Donohue, The University of Chicago Press, £29, ISBN 978022615771



Kathleen Donohue's book on Darwin's finches compiles a beautiful collection of scientific work on a group of birds that have become a legend and role model for evolutionary studies since Charles Darwin's visit to Galapagos. This composition of historic writings, seminal scientific articles and Donohue's own introductory chapters provides an excellent insight into the major topics that have shaped the field of evolutionary biology – from geology and ecology to genetics and developmental biology. It is a book well worth reading for students, scholars and everybody with an interest in the history and processes of evolution and speciation.

Paquita Hoeck



PHOTO APP

The Galapagos Project

by Susanna Kubernus, iTunes Store, £1.49; compatible with iPhone, iPod, iTouch and iPad

Photographer and designer Susanna Kubernus' first App gives the opportunity to choose between 32 amazing Galapagos photos to send as customised e-cards to your friends. GCT will receive a small percentage from each sale.

Richard Moody

Make someone's Christmas or birthday, or treat yourself with one of our fantastic Galapagos gifts!

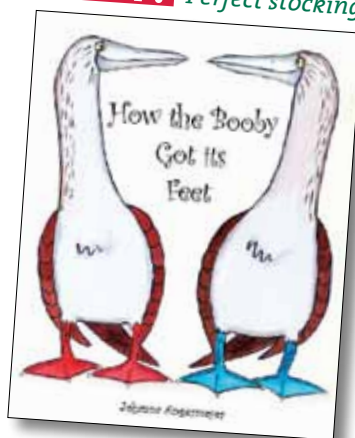
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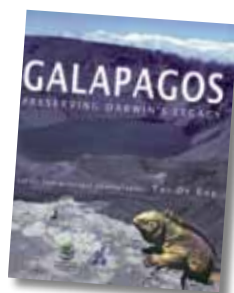
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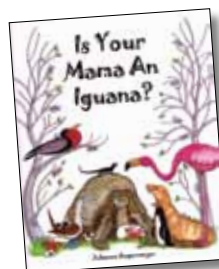
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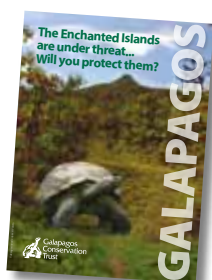
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order online, please visit our website
(www.savegalapagos.org/shop) .

Not Another Booby!

The **Galapagos Carpenter Bee** (*Xylocopa darwini*) is the only bee in Galapagos and one of the Archipelago's most important pollinators. As its name suggests (and like Carpenter Bees elsewhere in the world), the females bore holes in dead wood into which they deposit eggs. Unusually for bees, this species is solitary, with the females feeding larvae with nectar until they pupate. In this photo, a female (black and more common than the yellow-brown males) is foraging on Darwin's Cotton Flower (*Gossypium darwinii*), a species encountered by Charles Darwin on San Cristobal and Santiago in 1835. In the 1990s, genetic studies confirmed the close relationship between this species and the more widely distributed South American Cotton (*G. barbadense*). Although of no commercial value, the seeds of Darwin's Cotton Flower produce a white lint, which is often used as nesting material by the native birds.

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- 1) Via our website (www.savegalapagos.org)
- 2) By telephone 020 7629 5049
- 3) By completing the details on this form and returning with your preferred payment method to **Galapagos Conservation Trust, 5 Derby Street, London W1J 7AB**

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